



DEPARTMENT OF THE AIR FORCE
59TH MEDICAL WING (AETC)
JOINT BASE SAN ANTONIO - LACKLAND TEXAS

23 NOV 2016

MEMORANDUM FOR ST

ATTN: DR SANDRA VALTIER

FROM: 59 MDW/SGVU

SUBJECT: Professional Presentation Approval

1. Your poster, entitled **Center for Advanced Molecular Detection Capabilities** presented at **Medical Research Acquisition Work Group Meeting 29-30 November 2016** in accordance with MDWI 41-108, has been approved and assigned local file #**16402**.
2. Pertinent biographic information (name of author(s), title, etc.) has been entered into our computer file. Please advise us (by phone or mail) that your presentation was given. At that time, we will need the date (month, day and year) along with the location of your presentation. It is important to update this information so that we can provide quality support for you, your department, and the Medical Center commander. This information is used to document the scholarly activities of our professional staff and students, which is an essential component of Wilford Hall Ambulatory Surgical Center (WHASC) internship and residency programs.
3. Please know that if you are a Graduate Health Sciences Education student and your department has told you they cannot fund your publication, the 59th Clinical Research Division may pay for your basic journal publishing charges (to include costs for tables and black and white photos). We cannot pay for reprints. If you are 59 MDW staff member, we can forward your request for funds to the designated wing POC.
4. Congratulations, and thank you for your efforts and time. Your contributions are vital to the medical mission. We look forward to assisting you in your future publication/presentation efforts.

Linda Steel-Goodwin

LINDA STEEL-GOODWIN, Col, USAF, BSC
Director, Clinical Investigations & Research Support

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH PUBLICATIONS/PRESENTATIONS			
TO: Clinical Research Division/SGVU (59 MDW/SGVU)		FROM: Author's Name, Rank, Grade, Office Symbol Sandra Valtier, PhD, GS 13	
		PROTOCOL NUMBER: NA	
PROTOCOL TITLE - [NOTE: For each new release of medical research or technical information as a publication/presentation, a new 59 MDW Form 3039 must be submitted for review and approval.] NA			
1. TITLE OF MATERIAL TO BE PUBLISHED OR PRESENTED Center for Advanced Molecular Detection Capabilities			
2. FUNDING RECEIVED FOR THIS STUDY? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO FUNDING SOURCE: NA			
3. IS THIS MATERIAL CLASSIFIED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
4. IS THIS MATERIAL SUBJECT TO ANY LEGAL RESTRICTIONS FOR PUBLICATION OR PRESENTATION THROUGH A COLLABORATIVE RESEARCH AND DEVELOPMENT AGREEMENT (CRADA), MATERIAL TRANSFER AGREEMENT (MTA), INTELLECTUAL PROPERTY RIGHTS AGREEMENT ETC.? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO NOTE: If the answer is "YES" then attach a copy to the Agreement to the Publications/Presentations Request Form.			
5. MATERIAL IS FOR (Check appropriate box or boxes for approval with this request.) <input checked="" type="checkbox"/> DOMESTIC RELEASE <input type="checkbox"/> FOREIGN RELEASE (ATTACH COPY OF MATERIAL TO BE PUBLISHED/PRESENTED)			
<input type="checkbox"/>	PUBLICATION/JOURNAL (List intended publication/journal)		
<input type="checkbox"/>	PUBLICATION ABSTRACT (List intended journal.)		
<input checked="" type="checkbox"/>	POSTER (To be demonstrated at meeting/Name of Meeting, City, State, and Date of Meeting) Medical Research Acquisition Work Group Meeting 29-30 November 2016		
<input type="checkbox"/>	PLATFORM PRESENTATION (At civilian institutions/Name of Meeting, State, Date of Meeting)		
<input type="checkbox"/>	OTHER (Describe: Name of Meeting, City, State, and Date of Meeting)		
6. WHAT IS THE EXPECTED DATE YOUR PRESENTATION/PUBLICATION WILL BE SUBMITTED TO THE DEFENSE TECHNICAL INFORMATION CENTER (DTIC)? NA			
POINT OF CONTACT			
7. WHO IS THE PRIMARY 59 MDW POINT OF CONTACT? (Last, First, MI.) (Include email) Valtier, Sandra, sandra.valtier@us.af.mil			DUTY PHONE/PAGER No. 210-671-3057
AUTHORSHIP AND CO-AUTHOR(S) (List in the order they will appear in the manuscript)			
LAST NAME, FIRST NAME AND MI.	GRADE/RANK	SQUADRON/GROUP/OFFICE SYM	INSTITUTION (If not 59 MDW)
a. Primary/corresponding author Sandra Valtier	GS 13	59MDW/ST	
b. Manuel Y. Caballero	GS 12	59MDW/ST	
c.			
d.			
e.			
f.			
g.			
I CERTIFY ANY HUMAN OR ANIMAL RESEARCH RELATED STUDIES WERE APPROVED AND PERFORMED IN STRICT ACCORDANCE WITH 32 CFR 219, AFMAN 40-401_IP AND 59 MDWI 41-108. I HAVE READ THE FINAL VERSION OF THE ATTACHED MATERIAL AND CERTIFY THAT IT IS AN ACCURATE MANUSCRIPT FOR PUBLICATION AND/OR PRESENTATION.			
AUTHOR'S PRINTED NAME/RANK/GRADE Sandra Valtier, PhD, GS 13 Director, CAMD		AUTHOR'S SIGNATURE VALTIER.SANDRA.1230996403 <small>Digitally signed by VALTIER.SANDRA.1230996403 DN: cn=US, o=U.S. Government, ou=DoD, ou=PR, ou=USAF, cn=VALTIER.SANDRA.1230996403 Date: 2016.11.17 13:05:49 -0600</small>	DATE Nov 17, 2016
APPROVING AUTHORITY'S PRINTED NAME, RANK, TITLE William C. Terry, GS-13, Senior Med Mod Program Analyst/Manager		APPROVING AUTHORITY'S SIGNATURE TERRY.WILLIAM.CHRIS.115288909 3 <small>Digitally signed by TERRY.WILLIAM.CHRIS.115288909 DN: cn=US, o=U.S. Government, ou=DoD, ou=PR, ou=USAF, cn=TERRY.WILLIAM.CHRIS.115288909 Date: 2016.11.17 13:40:37 -0600</small>	DATE Nov 17, 2016

PROCESSING OF PROFESSIONAL MEDICAL RESEARCH PUBLICATIONS/PRESENTATIONS			
1st INDORSEMENT (SGVU Use Only)			
TO: Clinical Research Division (59 MDW/SGVU) (Contact 292-7141 for email instructions)	1. DATE RECEIVED Nov 21, 2016	2. ASSIGNED PROCESSING REQUEST FILE NUMBER 16402	
3. DATE REVIEWED Nov 22, 2016		4. DATE FORWARDED TO PA	
5. AUTHOR CONTACTED FOR RECOMMENDED OR NECESSARY CHANGES <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES If yes give date: <input type="checkbox"/> N/A			
6. COMMENTS <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED non-research publication of CADM capabilities			
PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER Kevin Kupferer/GS13/Human Research Subject Protection Expert	DATE Nov 22, 2016	SIGNATURE OF REVIEWER KUPFERER.KEVIN.R.1086667270 <small>Digitally signed by KUPFERER.KEVIN.R.1086667270 DN: c=US, o=U.S. Government, ou=DoD, ou=PA, ou=USAF, ou=KUPFERER.KEVIN.R.1086667270 Date: 2016.11.22 15:31:40 -0500</small>	
2nd INDORSEMENT (PA Use Only)			
TO: 59 MDW OFFICE OF PUBLIC AFFAIRS (PA)	1. DATE RECEIVED Nov 23, 2016	2. DATE FORWARDED TO 59 MDW/SGVU Nov 23, 2016	
6. COMMENTS <input checked="" type="checkbox"/> APPROVED (In compliance with security and policy review directives.) <input type="checkbox"/> DISAPPROVED			
PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER Kevin Iinuma, SSgt/E-5, 59 MDW Public Affairs	DATE Nov 23, 2016	SIGNATURE OF REVIEWER IINUMA.KEVIN.MITSUGU.1296227613 296227613 <small>Digitally signed by IINUMA.KEVIN.MITSUGU.1296227613 DN: c=US, o=U.S. Government, ou=DoD, ou=PA, ou=USAF, ou=IINUMA.KEVIN.MITSUGU.1296227613 Date: 2016.11.23 09:42:26 -0500</small>	
3rd INDORSEMENT (SGVU Use Only)			
TO: 59 MDW/SGVU		1. DATE RECEIVED	
2. SENIOR AUTHOR NOTIFIED BY PHONE OF APPROVAL OR DISAPPROVAL: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Could not be reached <input type="checkbox"/> Left message			
3. DATE WRITTEN NOTICE OF APPROVAL AND CLEARANCE MAILED TO AUTHOR: 			
4. COMMENTS <input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED			
PRINTED NAME, RANK/GRADE, TITLE OF REVIEWER	SIGNATURE OF REVIEWER		DATE



Center for Advanced Molecular Detection

Science & Technology, Chief Scientist's Office

59 Medical Wing, JBSA-Lackland



MISSION AND OPERATIONS

The Center for Advanced Molecular Detection (CAMD) is located at JBSA-Lackland. CAMD operates within Science & Technology, under the Chief Scientist's Office. The Center is a multifaceted biomedical research, development, testing, and evaluation (RDT&E) facility. The overall mission of CAMD is to carry out biomedical RDT&E projects effectively aligned with the Air Force Medical Service and its Programs of Record (AP&S/PRs) and more broadly, the Department of Defense, e.g., JPRCs. In that spirit, and to effectively carry out its mission, the Center collaborates with various DoD and other Government entities, as well as civilian institutions. A notable thrust of CAMD operations and future direction is research focused toward such translational applications as personalized and regenerative medicine. Research at CAMD spans genetic, genomic, biochemical, and cell and molecular biological disciplines.

CAMD projects fall into two general categories. Collaborative projects initiated at CAMD or other research and medical treatment facilities (MTFs), and projects developed and done at the Center from concept to completion. Another aspect of work that is part of CAMD mission is one of service and guidance, whereby the Center staff render assistance in developing grant proposals, as well as the IRB protocols. As CAMD enhances its research endeavors, the Center anticipates that a significant part of its funding will come from competitive sources, and such sources are now rigorously sought.

RESEARCH PROJECTS

CAMD Data & Tissue Repositories

The Center maintains two IRB-approved tissue and data repositories. The collection includes unprocessed upper respiratory tract samples, whole blood, and nucleic acids.

Disease Genetics & Genomics

In medical research, ardent efforts are under way all over the World to find genetic, genomic, proteomic, and other biomarkers of disease. Such markers individually or in patterns would be potentially predictive, diagnostic, and prognostic for disease. CAMD, too, aims to vigorously pursue research in this nascent field. The current focus is on genetic and genomic biomarkers. Several projects of high impact for the military community are under way. More are expected as the Center expands its capabilities.

- Musculoskeletal disease and injury.** This is the largest project of its kind at CAMD, and for the long term it is expected to encompass two phases. Phase 1, now in progress, focuses on genetic and genomic variations that appear to associate with MSK diseases. For this work, the Center has procured over 2000 individual-specific DNA samples, which represent such ailments as osteoarthritis, rheumatoid arthritis, and osteoporosis. Phase 2 will aim to do the analysis on certain active-duty military trainees to identify genetic and genomic variations that may predict propensity to MSK injury during training.
- Post-traumatic stress disorder (PTSD).** This is a highly important project, one of great significance for DoD. The work is collaborative with clinical investigators, and it has several major aims: SNPs that appear to associate with PTSD; genotyping of serotonin transporter gene variations that may confer susceptibility to PTSD; telomere (chromosomal end segments) length measurement; and DNA methylation status to be done at the Clinical Research Division, 59 Medical Wing.
- Type 2 Diabetes Mellitus (T2DM).** This project aims to assess correlation of single nucleotide variations or polymorphisms (SNPs) with T2DM. The Center recently finished testing for a set of 18 SNPs in nearly 600 individual samples from the military community. Work is in progress to test for additional variations. The samples were collected at the Wilford Hall Ambulatory Surgical Center, 59 Medical Wing, Kelly Air Force Clinic, JBSA-Lackland.
- Cardiovascular disease.** This project aims to assay military community samples for certain SNPs that reportedly correlate with cardiovascular conditions.

RESEARCH PROJECTS (CONT.)

Stem Cell Research

CAMD houses a dedicated mammalian cell culture lab. The current work is with human stem cells, notably mesenchymal stem cells (MSC). The MSC collection at CAMD includes all three common sources of these cells – adipose tissue, bone marrow, and umbilical cord. These individual-specific cells were procured from several commercial sources. The Center has propagated MSCs for collaborative animal studies. In progress at the University of Texas Health Science Center at San Antonio. A greater goal of the Center is to develop subpopulations and clonal lines of stem cells that have highly desirable properties for therapeutic purposes, including those highly significant for the military personnel, such as tissue regeneration, wound healing, and immune system modulation.

To enhance these research capabilities, CAMD is procuring a FACS machine, a large-scale gene chip analysis machine, and a state-of-the-art fluorescence microscope. All three instruments will greatly facilitate not only the stem cell work, but will also prove crucial in other biomedical research endeavors at the Center.

Virulent Pathogens

As a long-term ongoing effort, CAMD tests for about 24 common upper respiratory tract bacterial and viral pathogens, such as the influenza viruses, certain adenoviruses, and some pneumococcal bacteria. The aim is to gauge prevalence of such germs at Lackland. Currently the focus of this testing is the military community members who visit the Wilford Hall Clinic. But in the past the major focus was on the basic military trainees (BMTs) at the Base. Given that Lackland AF Base is the site of the 59th Medical Wing, CAMD expects that in the future the pathogen testing effort will once again focus on BMTs. The pathogens tested include:

CAMD CAPABILITIES

Personnel

The Center is staffed with well-qualified research nurses, coordinators, bench scientists, and an Air Force officer. The staff qualifications span bachelor's, master's and doctoral degrees. The research nurse coordinator staff's expertise includes enrolling human subjects, obtaining written consent, collecting required samples, managing/maintaining study files/databases, and administration of regulatory affairs (including preparation of protocol documents for IRB approval). The bench scientists' expertise spans a spectrum of molecular and cell biological, biochemical, recombinant DNA, genetic, and genomic techniques. A complement of personnel is professionally certified medical technologists.

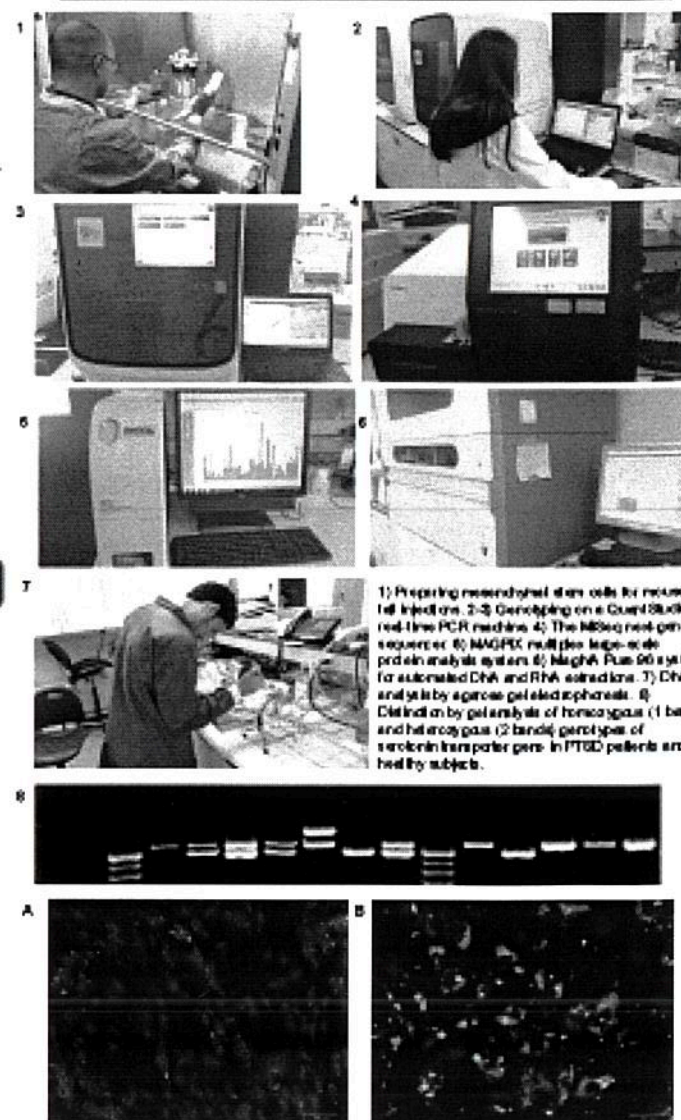
Equipment

CAMD has excellent laboratory capabilities that span a diverse array of instruments, technologies, and biotechniques. The Center houses state-of-the-art equipment to accomplish its mission. The major instruments include 9 latest real-time PCR machines, a high-throughput automated robotic DNA and RNA purification machine, a next-generation sequencing machine, an advanced digital gel imaging system, a multiple fluorescence protein analysis machine, and one UVA/visible and 2 fluorescence spectrometers. An advanced gene chip analysis machine, a fluorescence microscope, and a FACS machine are in procurement. And a large capacity deep sequencing machine is being sought for the near future. The cell culture lab has a BSL2 cabinet, 2 incubators, and a liquid nitrogen tank for mammalian cell storage.

Techniques

Major biotechniques at the Center include all aspects of cell culture and various cell assays, DNA & RNA purification, UVA/visible and fluorescence spectroscopy, real-time PCR, ELISA, gel electrophoresis & blotting, and DNA sequencing. Large-scale sequencing, FACS analysis, fluorescence microscopy, and chip-based gene expression analysis capabilities are slated to be in place in the near future. Its optional expertise in recombinant DNA techniques is also available at the Center.

MISSION



1) Preparing mesenchymal stem cells for mouse cell injection. 2-3) Genotyping on a QuantStudio 6 real-time PCR machine. 4) The NGS next-gen sequencing system. 5) MAGPIX multiplex large-scale protein analysis system. 6) MagNA Pure 96 system for automated DNA and RNA extractions. 7) DNA analysis by gel electrophoresis. 8) Distinction by gel analysis of homopolymers (1 band) and heteropolymers (2 bands) genotyping of a serotonin transporter gene in PTSD patients and healthy subjects.

A, normal, undifferentiated adipose mesenchymal cells. B, Following induction, differentiation into adipocytes, as indicated by staining of lipid droplets (green fluorescence).

Optimized conditions aimed at the efficiency of lipid droplet formation in adipocytes of healthy donors.